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GUIDELINES FOR BENCHMARKING AND MANUFACTURING LEVEL AGREEMENT FOR OUTSOURCING

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Abstract: The outsourcing of manufacturing functions is increasingly adopted by most of the manufacturers. However, due to differences between outsourcer (company) and outsourcee (supplier) regarding their locations, management methods, legal and taxation system, there are difficulties in practicing outsourcing effectively. The motive of the outsourcing is to exploit the potential benefits. The outsourcing will not guarantee success without benchmarking and explicitly well defined Manufacturing Level Agreement (MLA) among outsourcing participants. This paper addresses the concern in assisting outsourcing companies and practitioners setting up benchmarking and Manufacturing Level Agreement (MLA).

1. Introduction:

Since the last two decades researchers have increased their attention to improving outsourcing activities. (Mei-yuan, *et al.*, 2006) argued that a wrong decision choice make the outsourcer fail to achieve in reducing manufacturing lead time, cost and enhance quality. Outsourcing leads to significant savings over targeting a large and diverse business market (Gomez-Arias & Montermoso, 2007).Companies justify their sourcing strategy based on evaluating possibilities for cost savings (Gottschalk *et al.*, 2006). But the outsourcing of the manufacturing function is associated with additional cost that is due to outsourcing management. Having selected the outsourcee, the participant organisations sign a Manufacturing Level Agreement (MLA) upon initiating outsourcing. Both participants need to make more commitment, mutual adoption and contribute learning and resources (Wang and Kess, 2006). The main purpose of the MLA is facilitating exchange and preventing opportunism. The initial problem of the outsourcing arises when the desires or the goals of the outsourcer and the outsourcee conflict or their preferences are different. Outsourcing provides a chance to exploit the resources owned by other organisations in order to avail potential opportunities and benefits. The concept of complementarities and competencies explains that outsourcee can increase productivity and reduce cost for outsourcer (Gottschalk *et al.*, 2006). The outsourcer can acquire significant benefits from outsourcee's resources subject to the conditions that outsourcee has strategic resources with substantial competitive advantage. (King *et al.*, 1997) suggested that stages of growth are sequential in nature, occur in hierarchical progressions and involve a broad range of activities and structures. Agreements are formed between the outsourcer and the outsourcee to achieve mutually compatible targets that could not be achieved on their own. Behavioural expectations are partially shared by groups of outsourcing decision makers. The outsourcing MLA involves honouring agreements, avoiding falsification and harm to others. The benchmarks are set for performance measurement. The outsourcing agreements changes focus from specific obligations to availability of strategic resources and management of core competence.

2. Benchmarking and Manufacturing Level Agreement:

Having selected outsourcee, the participant organisations sign an agreement before initiating outsourcing. The outsourcing agreement is an explicit legal document that covers all aspects of the business from the first transaction to end of the specified agreement period and in the event of early termination of the agreement due to unforeseen circumstances. The MLA also includes method for evaluating outsourcing performance (benchmarking). This following part of the paper explains benchmarking, contents of MLA and implementation of the manufacturing level agreement.

3. Benchmarking:

Benchmarking is the systematic comparison of components of performance in an organisation against those best practices of relevant organisations (Lau *et al.*, 2005). Every contract/ agreement should have a benchmarking clause to measure and evaluate whether services are delivered at a fair market price and at appropriate level of service quality. (Fox, 2006; 2006b; Barton, 2003) introduced benchmarks for service industry contracts. In order to improve outsourcing there is a need to introduce benchmarks. Benchmarks are formulated effectively by involving strategic opportunities to improve performance and the sourcing participation. The proposed outsourcing benchmarks put metrics in context and show performance gaps. Benchmarks are used to add value to metrics by putting the number in context; the metrics and the target values become more applicable. Benchmarking analysis of outsourcing agreements and operations is essential for establishing pricing levels in the context of industry and market standards. A benchmarking clause enables both outsourcer and outsourcee to carry out an external, objective appraisal of 'value for money' to initiate outsourcing and during outsourcing period by adjusting prices based on the findings of the process. The generic process of benchmarking consists of four main steps, named as plan, collect, analyze and adapt. The benchmarking enables to reveal the weaknesses, especially comparing outsourcing to in-house functions.

3.1. Price, Quality and Delivery Dimension Benchmark:

The price, quality and delivery dimension bench marks are shown as equations 1-4. The results of the equation provide an indication whether there is an improvement or not. Totali and daffier are advised to implement benchmarks. The information data will be available in near future.

P_{bm} = price Standard/benchmark

P_{qf} = Quoted fair price

P_{rf} = Required fair price

C_v = Cost variation

C_a = Actual cost

C_e = Estimated cost

K_{qa} = Quality assurance

n_{rej} = Number of rejected parts

n_{rec} = Number of parts received

K_{dela} = Delivery assurance

$n_{on-time}$ =Number of on time deliveries

$n_{t-delivery}$ = Number of total deliveries

$$P_{bm} = \frac{P_{qf} - P_{rf}}{P_{rf}} \times 100 \quad (1)$$

$$C_v = \frac{C_a - C_e}{C_e} \times 100 \quad (2)$$

$$K_{qa} = \frac{n_{rej}}{n_{rec}} \times 100 \quad (3)$$

$$K_{dela} = \frac{n_{on-time}}{n_{delivery}} \times 100 \quad (4)$$

3.2. Economic Benefits:

The outsourcing relationship focuses preliminary on cost minimization and operational efficiency. The outsourcing agreement urges joint focus on business and mutual goals of outsourcer and outsourcee. Totalli chose Daffier as its outsourcee, using supplier selection model. Totalli outsourced to Dafier because the acquisition cost is less than in-house manufacturing cost. On the other hand outsourcing is sustainable when Daffier earns sufficient profit despite supplying at a price that is equal to or less than Totalli's in-house manufacturing cost without any profit. Therefore, both outsourcer (Totalli) and outsourcee (Daffier) get economic benefits by joining in outsourcing agreement.

Economic Benefit= In-house Manufacturing Cost - Acquisition Cost (5)

3.3. Primary Transaction:

The primary transaction is related to infrastructure. The outsourcing relationship matures as outsourcer and outsourcee invest jointly in infrastructure. In the case of Totalli and Daffier, the equation of primary transaction is different. Totalli invests in the product identification, product development and redesign, whereas, Daffier invests in its technological and manufacturing capabilities. Both outsourcer and outsourcee save in primary transaction by joining into outsourcing. For outsourcer the primary transaction equation can be expressed as:

Saving in primary transaction = Investment in infrastructure without outsourcing – Investment in infrastructure after outsourcing (6)

4. Manufacturing Level Agreement:

The manufacturing level agreement should describe explicitly in precise distinct words, the types, scope, and nature of all the manufacturing requirements (quantity, batch size, lead time, quality, frequency of delivery, flexibility in delivery quantity etc.). The manufacturing level agreement includes guidelines enabling the outsourcer to measure the outsourcee's contract performance by regularly monitoring the progress against benchmarks. Agreement monitoring guidelines include penalizing the outsourcee financially, in the event that the manufacturing function/ activities offered by outsourcee do not meet the requirements signed in the manufacturing agreement. The manufacturing level agreement between Totalli and Daffier includes every possible detail to minimise any future disputes.

4.1. Transfer of Assets:

For outsourcee to perform manufacturing, it may be needed transferring assets from outsourcer to outsourcee. The asset transfer is carried through the sale's agreement between outsourcer and outsourcee. It may also require independent valuation of the assets as part of the manufacturing level agreement. The assets transferred may include hardware, software licences, leases on equipments, patent licences and intellectual property rights etc. The transfer of assets may be subjected to tax and stamp duty that should also be addressed in the contract. Totalli has transferred product design specifications to Daffier for manufacturing. Since Daffier is not solely dedicated to Totalli and is manufacturing for a number of companies, therefore agreement was signed manufacturing particular products (products manufactured according to the specifications supplied by Totalli) exclusively for Totalli.

4.2. Transfer of Staff:

Transfer of staff from outsourcer to outsourcee is a common feature of outsourcing arrangement. In United Kingdom Labour Regulations 1981 and section 33(1) of the Trade Union Reform and Employment Rights Act 1993, require elaborated procedures to be completed before the staff transfer can take place and that their existing terms of services be granted in their transfer (Lee, 1996). The outsourcee is responsible to pay for the transferred staff and that cost is passed on to the outsourcer, as part of the manufacturing level agreement. In case of Totalli (outsourcer) and Daffier (outsourcee), there has not been transfer of staff.

4.3. Costing and Payments:

It is important that the manufacturing level agreement include costing, payments terms. and penalties. It should also state such as when, how and to whom payments should be made and the amounts and the structure of the payments. It may be possible that same manufacturing services can be obtained at lower cost in two years because of drop in technology cost. It is recommended avoiding such outsourcing contracts those may turn out expensive in long term and difficult to terminate. The costing and payments agreement between Totalli and Daffier is very simple and straight forward. Totalli is solely responsible for freight charges (Land, Sea and by Air charges). The cost of the product is negotiated flexibly, taking into account all the internal and external factors ranging from fuel cost to currency exchange rate. The payments are made in parts at intervals those suitable for both Totalli and Daffier. Totalli makes part of the payment at the beginning to facilitate Daffier in purchasing raw material and/ or relevant resources. The remaining part of the payment is transferred before the shipment of the product (Container or small parcel).

4.4. Warranty and Liability:

The inability of the outsourcee to comply the manufacturing level agreement makes it liable to be sued by the outsourcer for damages. From the outsourcer and outsourcee point of view, it is appropriate including express warranty into the manufacturing level agreement to indemnify the participant for breaching the contract and compensating the other participant for the losses incurred. It is important ensuring that losses are recoverable by explicitly providing for them in the contract (Lee, 1996). Totalli and Daffier has developed a very successful relationship. Daffier is responsible to replace any defective component or product but it is time consuming to send the component or the product back to Daffier and wait for the replacement or repaired. Since Totalli has highly skilled workforce that repairs most of the components and only a small fraction is left for replacement. This strategy saves time and money and even customer are assured that after sale their product's warranty is secured (Totalli customer survey report).

4.5. Dispute Resolution and Termination:

In order to complete one transaction, there are a number of activities involved in outsourcing of manufacturing operations between Totalli and Daffier. With the increase in outsourcing, there are possibilities that participant may not follow the contract agreement and result in dispute. Instead of following an expensive legal system to resolve dispute, proper dispute resolution mechanism is included in the agreement for dispute resolution through an independent third party (arbitrator or consultant). In case the dispute is not resolved and ends up in agreement termination, then the consequences of the termination should take into account and reasonable guidelines should be included in the outsourcing agreement. The outsourcing agreement should cover issues such as; buy back assets (Hardware, software and human resources) and price equation of buy back, transfer of third party contracts and leases, with assurance from participants that the transfer is smooth and proper. Currently Totalli transfers only product design specifications for manufacturing. The agreement explicitly includes the clauses in relation to the termination of manufacturing, in case where manufacturing agreement requirements are not met or when the outsourcee goes into liquidation or receivership.

4.6. Ownership of Intellectual Property Rights:

Explicitly detailed written agreement protects both outsourcer and outsourcee, in case of changing in circumstances and safeguards the interests of both. The outsourcing agreement between Totalli and Daffier includes explicitly ownership of intellectual property rights such as copyright, patents etc developed from outsourcing activities. There is a mutual agreement on the intellectual property right and that is included in the agreement in detail. In case of termination of the manufacturing agreement between Totalli and Daffier, the dispute resolution of the intellectual property rights is also included in the agreement.

4.7. Information Security and Confidentiality:

In manufacturing outsourcing, information security covers product design, software programme codes, and business data etc. When manufacturing is outsourced, the outsourcer (Totalli) is not fully in control of information security. It is important that Totalli and Daffier include level of information security and confidentiality required by both participants. Totalli may rely on manufacturing warranty to claim from the Daffier for any losses due to non-compliance of standards. Instead it is preferred implementing preventive measures and including them in the contract. Since the Daffier has access to Totalli's commercially sensitive data, it is very important ensuring that the confidentiality is maintained both during the agreement period and after termination or end of the agreement period by including relevant clauses in the agreement.

4.8. Completeness of Agreement:

Outsourcing agreement covers transfer of assets, staffing, pricing and payments, warranty and liability, dispute resolution mechanism, termination, intellectual property matters, and information security (Lee, 1996). As the outsourcing relationship matures, the participation becomes more prominent. The agreement is associated with transfer of assets and personnel. Totalli transfers product specifications and requirements to Dafier for manufacturing. This is part of the agreement that Dafier should not expose the Totalli's design specifications.

4.9. Outsourcee Behaviour Control:

The outsourcee behaviour control mechanism changes from a structured focus on operational efficiency to a more structured concern for the relationship's impact on strategic direction. The performance criteria should be on long term impact on the organisation. Totalli and Daffier are successfully integrating despite their differences of culture. Outsourcee behaviour control is assessed by preparing quarterly reports.

4.10. Labour Demarcation:

The demarcation of labour between the outsourcer and the outsourcee is specialised following the scope of the agreement. The participant organisations work together for continuous innovation but with different capabilities and specialisation by complementing each other. Totalli has a very small but highly skilled workforce that is capable of maintaining and improving quality complying with European standards. Monthly report is prepared discussing the labour demarcation.

4.11. Core Competence Management:

Outsourcing places responsibilities for manufacturing function in the hands of the constituent most capable of performing these successfully. The transfer of personnel from outsourcer to the outsourcee is recognised as valuable, rare and appropriate as they become strategic resource. Totalli specialise in motor-cycles and mopeds. Due to the nature and size of the Totalli, no human resources were transferred to Daffier and the outsourcer is running its business successfully. Core competence management is assessed by the number of new products introduced every year and the increase in its reputation in the local market.

4.12. Outsourcee's Resource Exploitation:

The outsourcee resources make technological initiatives to the outsourcer. The outsourcee represents a set of complementary capabilities, skills, competences and methods. Totalli selects products that can be easily modified to meet requirements instead of designing the products from the drawing stage. It is assessed by estimating the cost of the investment required developing the same resources in-house less cost paid to use outsourcee resources. It is a lengthy and time consuming process. Instead, it is recommended utilising resources owned by Daffier to the limit until additional cost is demanded.

4.13. Alliance Exploitation:

Manufacturing outsourcing relationships are collaborative, the outsourcer and outsourcee get involve making sure requirements are fulfilled. It is also made sure that any tangible or intangible resource is available for use. Totalli and Daffier joined in outsourcing relationship because both complement each other in their expansions.

4.14. Relationship Exploitation:

Outsourcing is started by sharing information between outsourcer and outsourcee followed by joint planning of the outsourcer and outsourcee. Finally outsourcer (Totalli) and the outsourcee (Daffier) use relational norms that simplify and smooth processes and activities between them.

4.15. Social Exchange Exploitation:

The scarcity of investment for resources creates social exchange and engages Totalli and Daffier to acquire valuable input. As the outsourcing matures the inter-personnel exchange from purely economic to non-economic is encouraged.

5. Signing Outsourcing Agreement:

In an outsourcing relationship, the participants engage in an agreement under which one of the organisation transfers its activities to another organisation that involves delegating decision-making authority. Totalli SRL and Dafier understood and followed the above mentioned procedures step by step.

5.1. Pre-agreement Settlements:

Before signing an agreement, the Totalli should have a clear concept as exactly what part of manufacturing function/ activities to be outsourced. Negotiating an outsourcing agreement is a lengthy and resource consuming process. Once the manufacturing agreement is implemented, it is difficult to alter and costs a substantial amount of extra resources and time. It is recommended resolving all possible issues before negotiating the agreement, so that the final agreement should be free from errors. Totalli and Daffier have simplified negotiation procedure by including a checklist of principles and introducing the technicalities in the draft agreement in the initial stage. The checklist produced a skeleton agreement that was finally developed into a well structured agreement. It is important that document (information) flows are managed effectively minimising any confusion.

5.2. Implementing Outsourcing Agreement:

The outsourcing contract was the number one key issue to a successful outsourcing relationship (Lacity & Hirschheim, 1993). A tight contract is the only mechanism to ensure that the expectations of the outsourcing customers are met (Lee, 1996). A comprehensive outsourcing contract lists all pre-contractual negotiation and post-contractual management. Three types of contracts are highlighted by (Lee, 1996), such as complete outsourcing contracts, facility management outsourcing contracts and system integration outsourcing contract. Complete outsourcing of manufacturing involves the transfer of all manufacturing function/ activities of an organisation along with its existing assets such as hardware, software and personnel from the outsourcer to the outsourcee. In this study contract for part outsourcing of manufacturing function/activities is formulated. Such contracts are lengthy and complicated, involving entire range of assets and relevant legal issues and are short to long term. The outsourcee assumes part of the risks and manufacturing responsibilities of providing the outsourcer with its manufacturing requirements for the duration of the contract period agreed. The degree of internalisation of human and technical resources is still high for outsourcing of manufacturing function/ activities.

Contractual issues are common to most types of outsourcing contracts in transferring manufacturing and/ or assembling responsibilities from an outsourcer to an outsourcee through a contract. Outsourcing contract of manufacturing function involves complicated business and legal issues. An outsourcer can not expect outsourcee to act in it's the best interest, in situations where a conflict of interest arises. An explicit written manufacturing contract is the most important tool for defining the conflicts, liabilities and expectations of both participants that structures the behaviour of both outsourcer and outsourcee. It is a collection of relevant agreements covering all possible aspects such as manufacturing level, transfer of assets , pricing and payment, warranty and liability, dispute resolution mechanism, termination, intellectual property matters, and information security.

5.3. Post-agreement Management:

The agreement is the only definitive legal document defining the relationships between Totalli and Daffier. An explicit detailed well written agreement is a key to a successful relationship because of ease in its management due to the necessary mechanism should have been built into the agreement. The Totalli has assigned the outsourcing agreement management to a very experienced manager, who understands the services provide by outsourcee. There is a direct communication between top management and managers dealing with post-contract management, so that any problems could be notified to the top management as soon as possible.

6. Conclusions:

This paper addresses issues which are important for outsourcing. Outsourcing evaluation is an important process in outsourcing of manufacturing activities. Benchmarks would result in adjusting prices based on market trends. Economic benefits cannot be assessed without benchmarking. It is important having clear control between participants in order to avoid conflict. The guidelines for MLA are formulated to facilitate companies for carryout outsourcing effectively. The company has been provided with the benchmarking and MLA guidelines. The guidelines have satisfied the management of the company and earned their approval. They recommended introducing some modifications according to types of products manufactured, locations of candidate outsourcees and relationship between outsourcee and the outsourcer. One of the important recommendations was to prepare a Performa that includes manufacturing level agreement that could be signed with any company, only by incorporating participant company name. The second recommendation was to arrange the benchmarks by their priority order. Due to limited resources, the company is implementing benchmarks in phases. The management also appraised the details of the manufacturing level agreement and it will be considered when renewing the agreement.

7. References:

Barton, N. (2003), 'Fair Market Price: Using Benchmarks to Establish Rates for Outsourcing Services', Compass Publishing BV. 2006.

Fox, G. (2006) a, 'The Power and Pain of Outsourcing Benchmarking: Contractual Clauses to Evaluate Services can be a Win/Win Proposition', Compass Publishing BV. 2006.

Fox, G. (2006) b, 'A Future for Outsourcing: Using Governance to Define Goals and Establish Performance Standards', Compass Publishing BV. 2006.

Gomez-Arias, J.T., Montermoso, J.P. (2007), 'Initial reference customer selection for high technology products', *Management Decision*, Vol.45.No.6 2007.pp.982-990.

Gottschalk, P., Solli-Saether, H. (2006), 'Maturity model for IT outsourcing relationship', *Industrial Management & Data Systems*, Vol.106.No.2 2006.pp.200-212.

King, W.R., Teo, T.S.H. (1997), 'Integration between business planning and information systems planning: validating a stage hypothesis', *Decision Science*, Vol.28.No.2.pp.279-308.

Lacity, M., Hirschheim, R. (1993), 'The information systems outsourcing bandwagon', *Sloan Management Review*, Vol.35.No.1.pp.73-86.

Lau, C.W., Lau, P.K.H., Fung, R.Y.K., Chan, F.T.S., Ip, R.W.L. (2005), ' A virtual case benchmarking scheme for vendor's performance assessment', *Benchmarking: An International Journal*, Vol.12.No.1 2005.pp.61-80.

Lee, M.K.O. (1996), 'IT outsourcing contracts: practical issues for management', *Industrial Management & Data Systems*, Vol.96.No.1.pp.15-20.

Mei-yuan, W., Yao-bin, L., Jin-long, Z. (2006), 'Software outsourcing risk management: establishing outsourcee evaluation item systems', *Journal of Zhejiang University SCIENCE A*, Vol.7.No.6 2006.pp.1092-1098.

Wang, L., Kess, P. (2006), 'Partnering motives and partner selection', *Distribution & Logistics Management*, Vol.36.No.6.pp.466-478.